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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/699,136 | 10/31/2003 | Tadashi Shiraishi | F-8019 | 3465 |

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EXAMINER

CARRILLO, BIBI SHARIDAN

| ART UNIT | PAPER NUMBER |
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1746

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/699,136 | TADASHI SHIRAISHI | |
| | Examiner | Art Unit | |
| | Sharidan Carrillo | 1746 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/29/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it is unclear what is meant by the phrase "in the state of the suction hose being connected to the heat transfer medium inlet or outlet...and the suction hose being connected to the heat transfer medium outlet or inlet". The above phrase seems to be duplicative. Claim 1 is further indefinite since there are no positive cleaning steps. Line 9 recites a "wherein" clause, the limitations of which conclude the ending of claim 1, with no positive cleaning steps recited. Claim 5 is indefinite for the following reasons. Since it is unclear the inside diameter of the heat exchange coil pipe, then it is further unclear the length of the ice cube since the length is based on the diameter of the coil pipe.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sameshima (JP01-028625) and further in view of Barry (4724007).

Sameshima teaches flushing a pipe using a carriage 1 with a suction pipe mounted thereon and waste water collecting tank 2 (Fig. 1, page 3). On page 5, Sameshima teaches cleaning with ice water until clean water flushes into the waste water collecting tank. Ice water enters port 12 and is suction pumped through the branch pipe and waste is collected in tank 2. On page 6, Sameshima teaches using the

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method for cleaning of a usual piping. Sameshima fails to teach cleaning heat exchangers.

Barry et al. teach a method of cleaning pipes and tubes, for example, in heat exchangers by using ice in combination with water (Abstract, col. 2, lines 60-65, col. 4, lines 25-45). It would have been obvious to a person of ordinary skill in the art to have modified the method of Sameshima to include heat exchangers, as taught by Barry et al., since both references teach cleaning piping for the same purpose of reducing fouling and deposits therein. In reference to the hopper, Barry et al. teach various magazines such as hoppers (Fig. 11), for storing ice particles and further transporting the pipe in the piping for cleaning. Additionally, it is conventional in the art to use hoppers for the generation and storage of ice particles (US5934566).

In reference to claim 3, Sameshima in view of Barry et al. fail to teach a transparent portion of the ice feeding hose. However, it would have been within the level of the skilled artisan to modify the method of Sameshima to include a transparent hose since Sameshima teaches the need to detect the completion of the cleaning cycle by observing whether clean water flows into the waste water collecting tank. In reference to claim 4, it would have been within the level of the skilled artisan to adjust the ratio of ice to water in order to form an effective composition which would be easily flowable, yet effective for scrubbing the interior surface of the pipe. In reference to claim 5, Sameshima in view of Barry fails to specifically teach the size of the ice cube. Barry et al., (col. 3, lines 35-40) teaches that the diameter of the pig is selected to permit it to penetrate the lumen of the contaminated tube. Given the teachings of Barry

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et al, it would have been well within the level of the skilled artisan to modify the size of the ice cube depending upon the diameter of the heat exchange tubing being cleaned and the amount of contaminants present therein.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sameshima (JP01-028625) and further in view of Barry (4724007), as applied to claims 1, and 3-5 in paragraph 6 above, and further in view of Withers Jr (4007774).

Sameshima in view of Barry fails to teach the limitations of claim 2, which is basically directed to the principle of reverse-flow. Withers Jr. teaches cleaning heat exchanger tubes by periodically reversing the fluid flow in order to remove coating deposits. It would have been obvious to a person of ordinary skill in the art to modify the method of Sameshima to include reverse flow, as taught by Withers, for purposes of effectively removing contaminants from the interior surface of the heat exchanger tubes. Additionally, the concept of enhanced cleaning by reverse flow is notoriously well known and conventionally practiced in the art.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Edstrand et al., Thomas, teach reverse flow. Kiholm, Takanashi, Quarini, Kasyanov, Walter, Brister, and Takanashi teach cleaning pipes with ice particles. Endo teaches a hopper for ice particles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on Monday-Friday, 6:00a.m-2:30pm.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sharidan Carrillo
Primary Examiner
Art Unit 1746

bsc



SHARIDAN CARRILLO
PRIMARY EXAMINER